



# ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: D-36  
 UNIQUE ID NUMBER: 12M001  
 COMBUSTOR:  
 ENGINE TYPE: TF

BYPASS RATIO: 5.0  
 PRESSURE RATIO ( $\pi_{00}$ ): 19.9  
 RATED THRUST ( $F_{00}$ ) (kN): 63.8

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NO <sub>x</sub>	SMOKE NUMBER
D <sub>p</sub> /F <sub>00</sub> (g/kN) or SN	14.0	52.8	59.6	17.4
AS % OF ORIGINAL LIMIT	71.4	44.7	74.7	64.8
AS % OF CAEP/2 LIMIT (NO <sub>x</sub> )			93.4	
AS % OF CAEP/4 LIMIT (NO <sub>x</sub> )			106.2	
AS % OF CAEP/6 LIMIT (NO <sub>x</sub> )			113.6	
AS % OF CAEP/8 LIMIT (NO <sub>x</sub> )			129.8	

### DATA STATUS

- PRE-REGULATION  
 x CERTIFICATION  
 - REVISED (SEE REMARKS)

### TEST ENGINE STATUS

x NEWLY MANUFACTURED ENGINES  
 - DEDICATED ENGINES TO PRODUCTION STANDARD  
 - OTHER (SEE REMARKS)

### EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE  
 (ANNEX 16 VOLUME II)

### CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)  
 x OUT OF PRODUCTION (DATE: - )  
 - OUT OF SERVICE (DATE: - )

### MEASURED DATA

MODE	POWER SETTING (%F <sub>00</sub> )	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO <sub>x</sub>	
TAKE-OFF	100	0.7	0.634	0.00	0.50	26.00	14.8
CLIMB OUT	85	2.2	0.533	0.00	0.40	22.00	
APPROACH	30	4.0	0.211	0.00	2.70	9.00	
IDLE	7	26.0		5.40	20.70	5.50	
LTO TOTAL FUEL (kg) or EMISSIONS (g)							-
NUMBER OF ENGINES				3	3	3	2
NUMBER OF TESTS				7	7	7	3
AVERAGE D <sub>p</sub> /F <sub>00</sub> (g/kN) or AVERAGE SN (MAX)				12.0	48.8	56.3	14.8
SIGMA (D <sub>p</sub> /F <sub>00</sub> in g/kN, or SN)				0.8	3.0	2.5	
RANGE (D <sub>p</sub> /F <sub>00</sub> in g/kN, or SN)				11.2-13	46.2-52	54.5-59	

### ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS  
 STAGE BLEED 0 (% CORE FLOW) AT - POWER SETTINGS

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	99.9-101.5
TEMPERATURE (K)	268-295
ABS HUMIDITY (kg/kg)	0.0017-0.0083

### FUEL

SPEC	RT
H/C	1.95
AROM (%)	18.5

MANUFACTURER: IVCHENKO PROGRESS ZMBK  
 TEST ORGANIZATION: ZMKB  
 TEST LOCATION: ZAPOROJE  
 TEST DATES: 17/05/1984-10/12/1984

### REMARKS

Compliance with Fuel Venting requirements:

- ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)